ONKYO SERVICE MANUAL

SERIAL NO. 3167

STEREO CASSETTE TAPE DECK

MODEL TA-2033

UDN, UDC, UD	120V AC, 60Hz
UGV, UG	220V AC, 50Hz
UW	120 or 220V AC, 50/60Hz
UQA, UQB	240V AC, 50Hz

SAFETY-RELATED COMPONENT WARNING!!

COMPONENTS IDENTIFIED BY MARK ⚠ ON THE SCHEMATIC DIAGRAM AND IN THE PARTS LIST ARE CRITICAL FOR RISK OF FIRE AND ELECTRIC SHOCK. REPLACE THESE COMPONENTS WITH ONKYO PARTS WHOSE PARTS NUMBERS APPEAR AS SHOWN IN THIS MANUAL.

MAKE LEAKAGE-CURRENT OR RESISTANCE MEASUREMENTS TO DETERMINE THAT EXPOSED PARTS ARE ACCEPTABLE INSULATED FROM THE SUPPLY CIRCUIT BEFORE RETURNING THE APPLIANCE TO THE CUSTOMER.

ONKYO
AUDIO COMPONENTS

SPECIFICATIONS

Track Format:	4 tracks, 2 channels
Erasing System:	AC erase
Tape Speed:	4.8 cm/sec. (1-7/8 i.p.s.)
Wow & Flutter:	0.045% (WRMS)
Frequency Response:	20–15,000 Hz (30–14,000 Hz ± 3 dB) (normal position tape) 20–16, 000 Hz (30–15,000 Hz ± 3 dB) (high position tape) 21–17,000 Hz (30–16,000 Hz ± 3 dB) (metal position tape)
Signal-to-Noise Ratio:	60 dB (metal position tape, Dolby NR out) A noise reduction of 10 dB above 5 kHz and 5 dB at 1 kHz is possible with Dolby B NR. A noise reduction of 20 dB at 5 kHz is possible with Dolby C NR.
Input Jacks:	Mic Jacks: 2 Minimum input level: 0.3 mV/600 ohms Input impedance: 5 kohms Line IN: 2 Minimum input level: 50 mV Input impedance: 50 kohms

Outputs:	Line OUT: 2 Std output level: 500 mV 500 mV (0 dB) Opt load impedance: Over 50 kohms Headphone Jack: 1 Opt load impedance: 8–200 ohms
Motor:	DC servo motor: 1
Heads:	Rec/PB head: Special Hard Permalloy Erase head: Ferrite
Semiconductors:	TR: 44 Diodes: 33 IC: 9 LED: 9
Power Consumption:	24 watts
Dimensions:	418(W) x 112(H) x 270(D)mm (16-1/2" x 4-3/8" x 10-5/8")
Weight:	4.5 kg. (9.9 lbs.)

Specifications and external appearance are subject to change without notice because of product improvements.

SERVICE PROCEDURES

1. Replacing the lamp

This unit used the lamp listed below.

Circuit No.	Parts No.	Description
PL-101	210090	PL14V 150mA

Caution; Before replacing the lamp. Be sure to unplug the power supply cable.

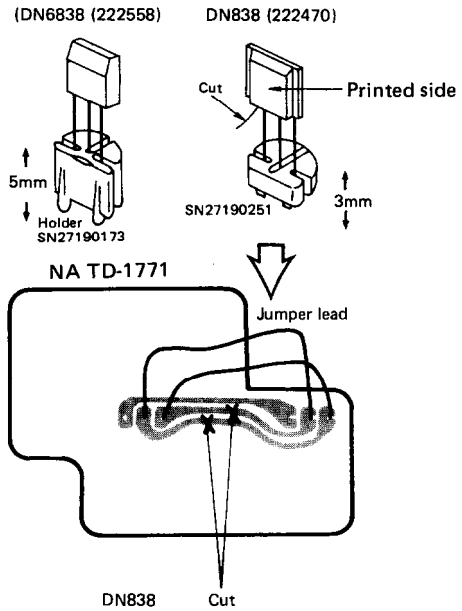
2. Instruction resistance measurement

Connect the insulating-resistance tester between the plug of power supply cord and chassis.

Specifications; D model 500V 3.3 ± 0.33MΩ
G/W models 500V more than 10MΩ

3. Replacing the Hall ICs

Cautions: As the position of leg of DN6838 and DN838 differ, use the same Hall IC when replacing.



FEATURES

Special Hard Permalloy Head Designed for Metal Tapes

The special process used to obtain the extra hard permalloy head surface ensures greater resistance to wear and a better saturation flux density in order to take full advantage of high performance metal tapes. The hyperbolic shape also improves head-to-tape contact.

Microcomputer-Controlled Full-Logic Operation

The TA-2033 employs full logic operation with micro-computer control in which separate solenoids are used for the FF, REW, PLAY and AMCS modes to assure excellent reliability.

Auto Music Control System (A.M.C.S.)

The AMCS automatically locates the beginning of every song on a cassette in either the forward or the reverse direction. When the forward AMCS button is pressed during the play mode, the tape is rapidly wound to the beginning of the next song and the first 10 seconds (approximately) is played. Then the tape is rapidly wound forward to the beginning of the next song and about 10 seconds is played again. This process continues until the PLAY button is pressed to cancel AMCS operation and return to normal playback. When the reverse AMCS button is pressed during the play mode, this process is performed in the reverse direction.

Dolby B and C Noise Reduction

Along with standard Dolby B NR, the TA-2033 laso has the even more effective Dolby C NR system. Dolby C NR reduces tape background noise by 20 dB at 5 kHz, about 3 times more than Dolby B NR. In addition to its wide band noise reduction, Dolby C NR uses a sliding band technique that varies the band width of noise reduction according to the input level, thereby avoiding noise "pumping." Dolby C NR also has an anti-saturation effect to reduce the chance of tape saturation in the high range. All these features combine to eliminate the adverse effects on tape sound that other noise reduction systems can canse.

Auto Space Rec Mute Button

Press this button while you're making a recording to automatically enter a blank section of tape about five seconds long. Once the blank section has been entered, the TA-2033 will automatically switch to the REC-PAUSE mode. To continue recording, simply press the PLAY button. This function is convenient for temporarily interrupting recording, editting tape during dubbing and inserting unrecorded sections long enough for the automatic continuous song location function to detect.

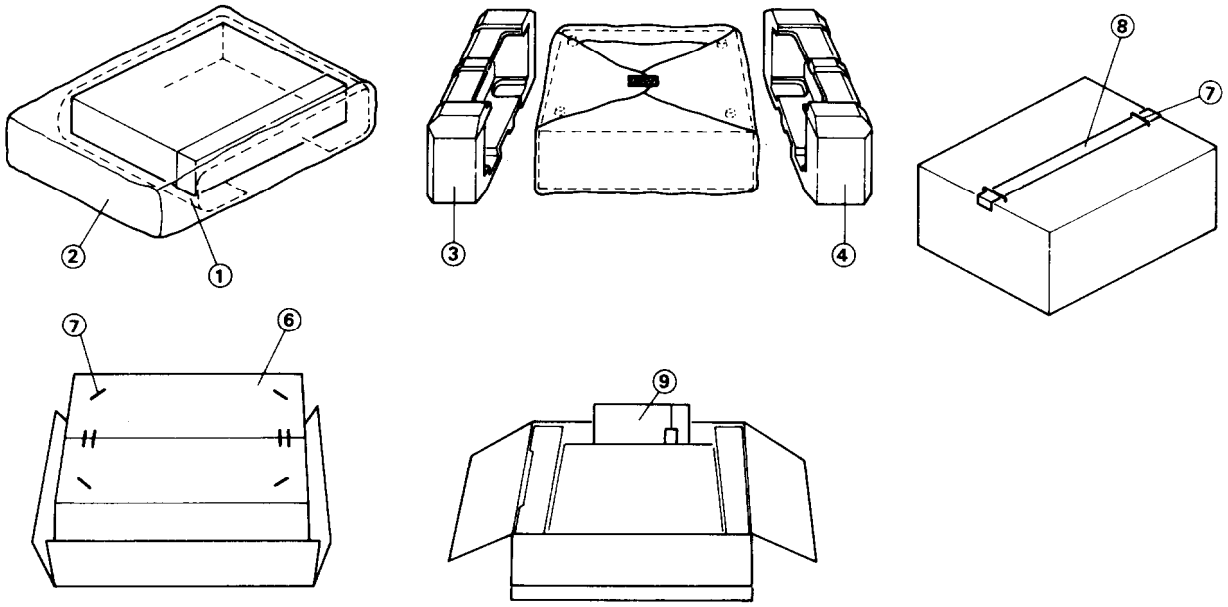
Semi-Automatic Tape Selection

The TA-2033 automatically senses when a normal position cassette is inserted and sets the tape selector to the normal position for you.

Full Auto-Stop Mechanism

Tape transport is automatically halted when the end of a cassette is reached to safeguard both tapes and the tape transport from undue strain.

PACKING VIEW



D model

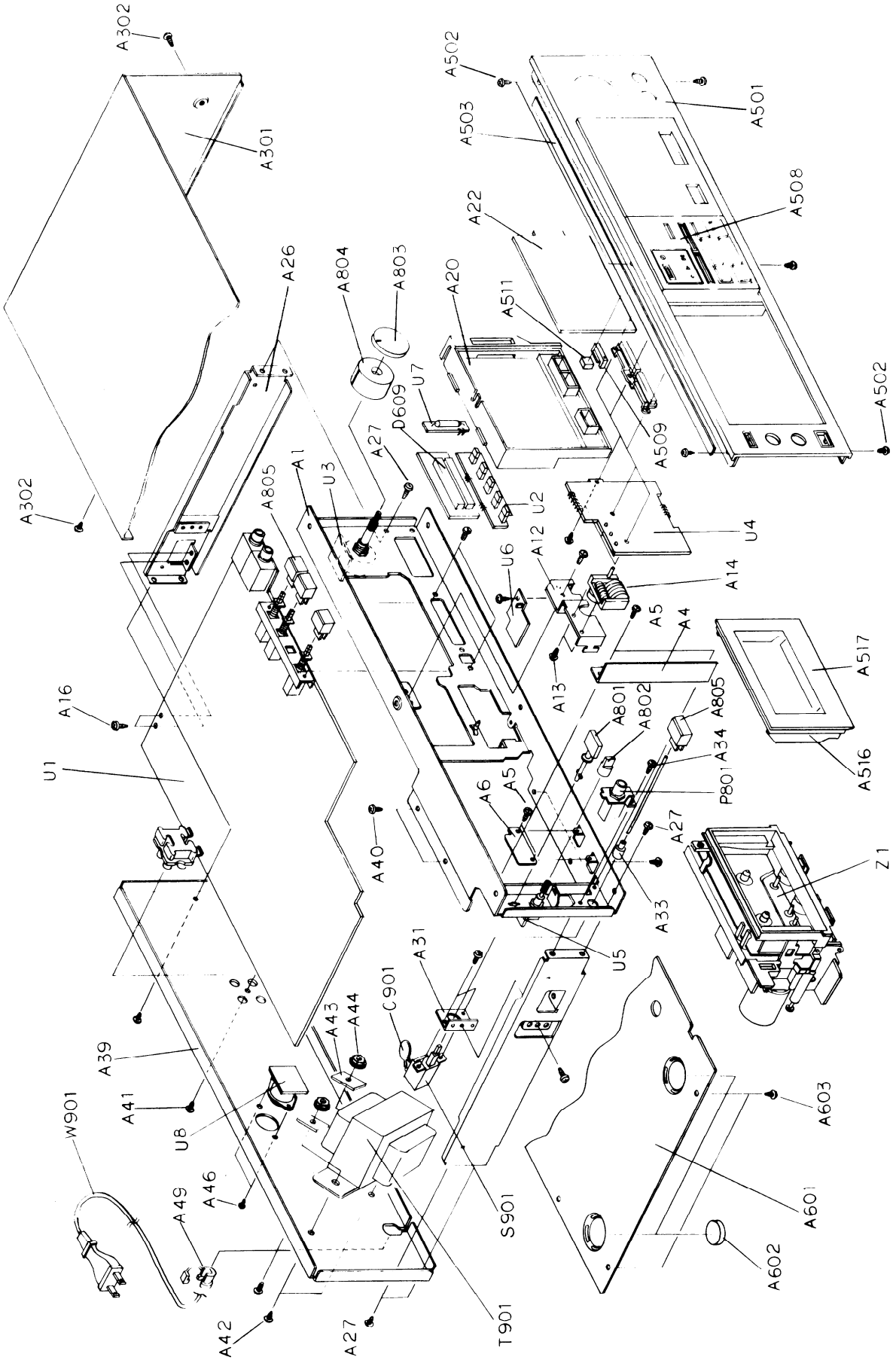
REF. NO.	PARTS NO.	DESCRIPTION
1	29095012-1	500x800mm, Protection sheet
2	29100063	500x750mm, Poly bag
3	29090747	Pad, right
4	29090746	Pad, left
6	29050789	Master carton box
7	282301	Sealing hook
8	260012	W-500mm, Damplon tape
9	Accessary bag ass'y	
	29340712	Instruction manual
	2010095	Connection cable
	29365006-1	Warranty card
	29358002	Service station list
	29100005	220x330mm, Poly bag

G/W model

REF. NO.	PARTS NO.	DESCRIPTION
1	29095012-1	500x850mm, Protection sheet
2	29100063	500x750mm, Poly bag
3	29090747	Pad, right
4	29090746	Pad, left
6	29050789	Master carton box
7	282301	Sealing hook
8	260012	W-500mm, Damplon tape
9	Accessary bag ass'y	
	29340713	Instruction manual
	2010095	Connection cable
	29365005-3	Warranty card (V)
	25055040	CV-K-2, Conversion plug (W)
	29100005	220x330mm, Poly bag

(V) : Only West Germany model
(W) : Only 120/220 V model

CHASSIS EXPLODED VIEW



CHASSIS EXPLODED VIEW—PARTS LIST

REF. NO.	PARTS NO.	DESCRIPTION
A1	27110196A	Front bracket
A2	27140705	Bracket H
A3	834430068	3TTS+6B (BC), Tapping screw
A4	28400098A	Plate
A5	834430068	3TTS+6B (BC), Tapping screw
A6	28175075	Insulator plate
A7	834430068	3TTS+6B (BC), Tapping screw
A8	27140706	Bracket M
A9	834430068	3TTS+6B (BC), Tapping screw
A10	82143006	3P+6FN (BC), Pan head screw
A12	27140786	Bracket C
A13	834430068	3TTS+6B (BC), Tapping screw
A14	24601142	Counter
A15	834426068	2.6TTS+6B (BC), Tapping screw
A16	831130088	3TTW+8B, Tapping screw
A19	270370A	Cushion
A20	11108704	Holder ass'y
A22	28130194	Dial plate
A26	27115130	Side bracket
A27	834430068	3TTS+6B (BC), Tapping screw
A28	831130088	3TTW+8B, Tapping screw
A31	27140478	Bracket, power
A32	834430068	3TTS+6B (BC), Tapping screw
A33	28320135	Connector
A34	27260091	Shaft
A35	82143006	3P+6FN (BC), Pan head screw
A39	27120521	Back panel (D)
	27120522	Back panel (G)
	27120523	Back panel (W)
A40	834430068	3TTS+6B (BC), Tapping screw
A41	834430108	3TTS+10B (BC), Tapping screw
A42	838440109	4TTB+10C (BC), Tapping screw
A43	870065	Washer, power transformer
A44	86414010	FWN4x10FN, Flange nut
A46	82142604	2.6P+4F (BC), Pan head screw
A49	270025	SR-3P-4, Strainrelief (D)
	270280	SR-4K-4, Strainrelief (G/W)
A51	833430080	3TTP+8P (BC), Tapping screw
A53	28140488	60x10x13mm, Cushion
A55	27190252	Holder, pcb
A56	834430108	3TTS+10B(BC), Tapping screw (G/W)
A301	28184193	Top cover
	28184192	Top cover (B)
A302	834430068	3TTS+6B (BC), Tapping screw
A501	11108121	Front panel ass'y
	11168121	Front panel ass'y (B)
A502	838430068	3TTB+6B (BC), Tapping screw
A503	28140024	10x390x0.5mm, Cushion
A505	27267216	Guide, eject
	27267273	Guide, eject (B)
A506	27267215	Guide, power
	27267272	Guide, power (B)
A507	28191149	Clear plate
A508	27215080	Decoration frame
	27215084	Decoration frame (B)
A509	28320871	Knob, push
	28321303	Knob, push (B)
A511	28140490	Cushion
A513	833430080	3TTP+8P (BC), Tapping screw
A516	28400140	Cassette lid
A517	28400149	Window
	28400150	Window (B)
A519	27273024	Joint
A520	27270117	Spacer
A601	27170155	Bottom board
A602	27175028	Leg
A603	834430068	3TTS+6B (BC), Tapping screw
A801	28320856	Knob, eject
	28321165A	Knob, eject (B)
A802	28320797	Knob, selector
	28321130	Knob, selector (B)
A803	28320671	Knob L
	28320900	Knob L (B)
A804	28320672A	Knob R
	28320928	Knob R (B)
A805	28320852	Knob, power
	28321160	Knob, power (B)
⚠ C901	3500065A	DE7150FZ103PAC400V, Capacitor IS
⚠ C901a	27300601	Cover, capacitor
D609	225129	SEL-8833, LED, meter
P801	25045092	HLJ-0607-01-020, Stereo headphone jack
P802	2000218	NSAS-12P-122, Socket for level meter
P803	260208	Binder
⚠ S901	25035375	NPS-111-L339P, Power swtich
⚠ S902	25065123	NSS-1258P, Voltage selector switch (W)
⚠ T901	230716	NPT-812D, Power transformer (D)
⚠	230717	NPT-812G, Power transformer (G)
⚠	230718A	NPT-812DG, Power transformer (W)
U1	11108566	NAAF-1766, Rec/pb amplifier pc board ass'y (D)
	11114566A	NAAF-1766a, Rec/pb amplifier pc board ass'y (G/W)
U2	11108567	NADIS-1767, Tape selector and Dolby indicator pc board ass'y
U3	11108568	NAVR-1768, Input level control pc board ass'y
U4	11108569	NASW-1769, Operation switch pc board ass'y
U5	11108570	NASW-1770, Timer switch pc board ass'y
U6	11108571	NATD-1771, Hall IC pc board ass'y
U7	11108572	NAPL-1772, Lamp pc board ass'y
U8	11108573	NARM-1773, Remote control terminal pc board ass'y
⚠ W901	253099B	AS-UC-3, Power supply cable (D)
⚠	253083-1	AS-CEE, Power supply cable (G/W)
Z1	244050	NDM-45, Tape mechanism ass'y

Note: (D): Only 120V model
(G): Only 220V model
(W): Only 120/220V model
(B): Only back model

NOTE: THE COMPONENTS IDENTIFIED BY MARK ⚠ ARE CIRTICAL FOR LISK OF FIRE AND ELECTRIC SHOCK. REPLACE ONLY WITH PARTS NUMBER SPECIFIED.

TAPE MECHANISM-PARTS LIST

PLACE	REF. NO.	PARTS NO.	DESCRIPTION
D1	1	24610913	Cassette detection lever
D1	2	24610914	Recording detection lever
B3	3	24610915	Cassette holder ass'y
B4	4	24605399	Spring for door
A1	5	24607025	Eject arm
A1	6	24604048	Spacer
A1	7	82113006	3x6mm, Pan head screw
B2	8	24610912	Cassette panel
B2	9	801293	2.6x12mm, Tapping screw
G1	10	24600040	Rec/pb head
G1	11	24600032	Erase head
H1	12	801291	Screw
G1, G2	13	24605387	Head azimuth spring
F1	14	24604049	Head stand
F1	15	24610923	Washer
F1	16	24602211	Supply reel ass'y
F2	17	24602212	Take-up reel ass'y
F2, G2	18	24610924	Poly-slider washer
E2	19	24610921	Spring holder
E2	20	24610916	Head chassis
E2	21	24607018	Brake arm L
E3	22	24607019	Brake arm R
E3	23	24605437	Brake spring
G4	24	24610917	Lock plate
G4	25	24605438	Spring for 24
F3	26	2480104	Washer
F3	27	24602214	Pinch roller ass'y
F4	28	24605439	Spring for 27
F3	29	24605440	Spring
F4	30	24610918	Operation plate
F4	31	24605441	Assist spring
E3	32	24610926	Washer
C6, D4, E3	33	801176	2.6x4, Screw with washer
E2	34	24605442	Back tension spring
E3	35	24602213	Idler gear
D3	36	801177	2.6x5, Screw with washer
B6, D2, F5	37	833130057	3x5, Tapping screw
C2	38	833120127	2x12, Tapping screw
C3	39	24605443	Eject arm spring
D4	40	24610919	Chassis
C4	41	24605444	Cassette holding spring
A3, A4	42	24606156	Solenoid
C4	43	24610920	Clutch ass'y
A3	44	24606157	Solenoid
D2	45	24610834	Damper
C4	46	24607020	Change arm
B5	47	24602186	Belt
C5	48	24602215	Belt
D5	49	24606158	Solenoid
D4	50	24607021	Plyback arm
D4	51	24605445	Spring for 50
D4	52	24602216	Idler ass'y
D5	53	24605446	Spring for 52
E5	54	24607022	Bracket R
D2	55	24607023	Bracket L
F5	56	24605447	Head base spring
F5	57	24605448	Assist base spring
F5	58	24610922	Assist base
E6	59	24602217	Playback gear
D6	60	870094	Washer
D5	61	24604051	Collar
D5	62	24605449	Spring
D6	63	24602218	Flywheel
C6	64	24604050	Spacer
A4-A5	65	2000234	Connector
C7	66	24607024	Motor bracket
G3	67	24602231	Counter belt
B7	68	24601132	Motor
B4, B5, C5	69	24606178	Pc board
H2	70		Connector
G1	71		Connector
B5	72	25035389	Tact switch
A6	73		Connector
B4	74		Lead wire
F5	75	24610977	Cushion
G4	76	893015	E1.5, Circlip
E3	77	24610840	Washer
D1	78	24610978	Chrome tape detection switch

ADJUSTMENT PROCEDURES

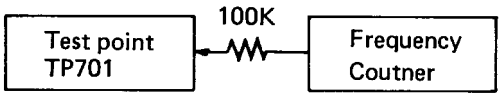
PRECAUTIONS

1. Before adjustment, clean the following parts with an alchol moinstend swab.
   * record/playback head
   * erase head
   * pinch roller
   * capstan
2. Do not use magnetized screwdriver for adjustments.
3. Demagnetize record/playback head with a head demagnetizer.

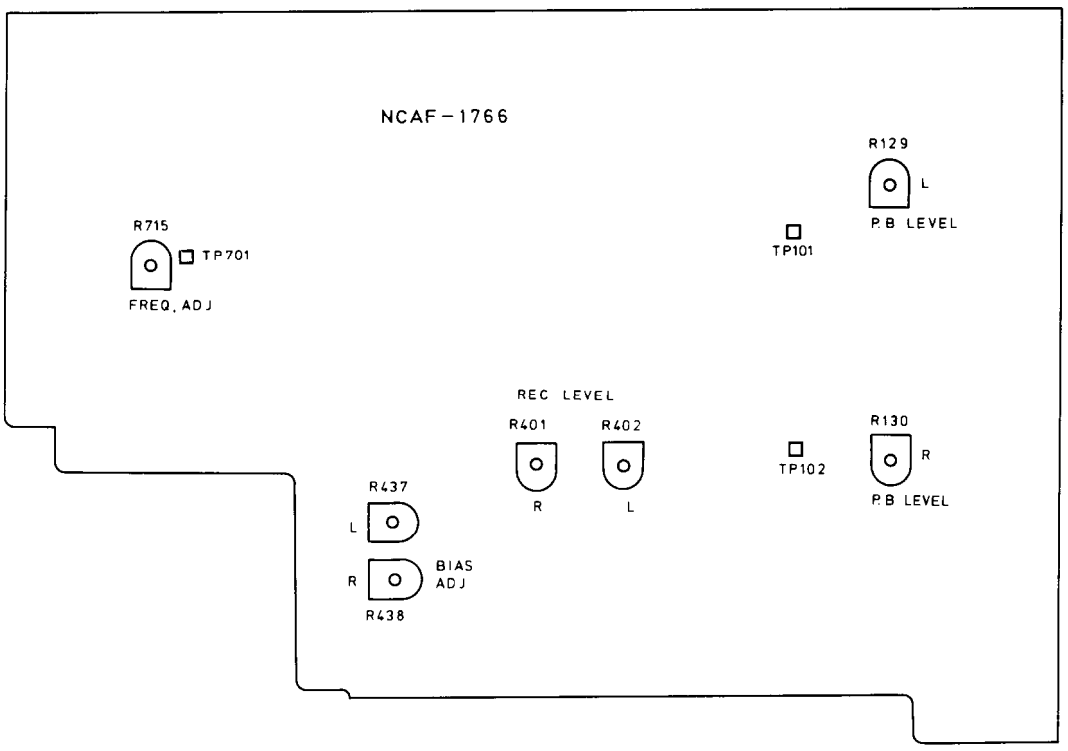
TEST EQUIPMENT/TOOLS REQUIRED:

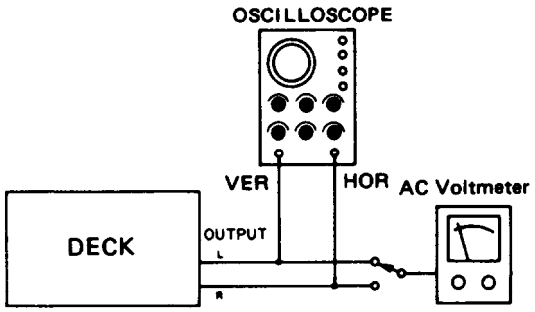
Audio oscillator
Digital frequency counter
Oscilloscope
Attenuator
AC voltmeter
Non-magnetic screw driver
Blank tapes (completely erased)
NORMAL . . . . . NEW UD90
HIGH . . . . . NEW XL-II90
METAL . . . . . NEW MX60
Test tapes
VTT-658 : 10 KHz, −15dB
MTT-111 : 3 kHz, −10dB
MTT-150 : Dolby level calibration 400Hz, tone 200nWb/m

	Item	Connection of instrument	Line input	Test tape	Mode	Output indicator	Adjustment point	Adjust	Remarks
1	Tape speed	Frequency counter to LINE output terminal		MTT-111	PB	Frequency counter	Semi-fixed on the moter	3,000 to 3,010Hz	
2	Head azimuth	AC voltmeter and oscillo-scope to LINE output terminal		VTT-658	PB	AC voltmeter	Head azimuth screws	Maximum and same phase at channels L and R.	See fig. 1 Set the semi-fixed resistors R129 and R130 to center position.
3	Playback level	AC voltmeter to terminals TP-1 and TP-2		MTT-150	PB	AC voltmeter	R129 (Ch. L) R130 (Ch. R)	580mV	
4	Bias current	Fig. 2	1kHz, −20dB and 12kHz, −20dB	NEW XL-II 90	REC/ PB	AC voltmeter	R437 (Ch. L) R438 (Ch. R)	Same level at REC/PB	INPUT VOLUME ..... maximum
5	Record level	Fig. 2	1kHz		REC PAUSE	AC voltmeter	Attenuator or AF OSC output	580mV	INPUT VOLUME ..... maximum
					REC/PB	AC voltmeter	R401, R402	Same level at REC/PB.	
6	**Clock adjustment** Connect the frequency counter via the resistor 100 kΩ to the terminal TP701 on the control pc board. Adjust the R715 so that the frequency counter indication becomes 170 ± 10 kHz.								



PLAY torque ..... 35 ~ 55gcm
FF, REW torque ..... 70 ~ 130gcm





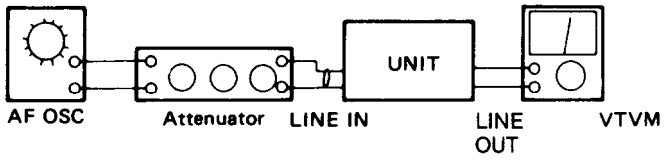
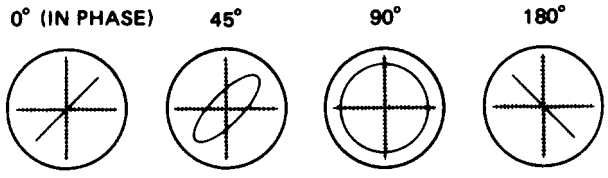


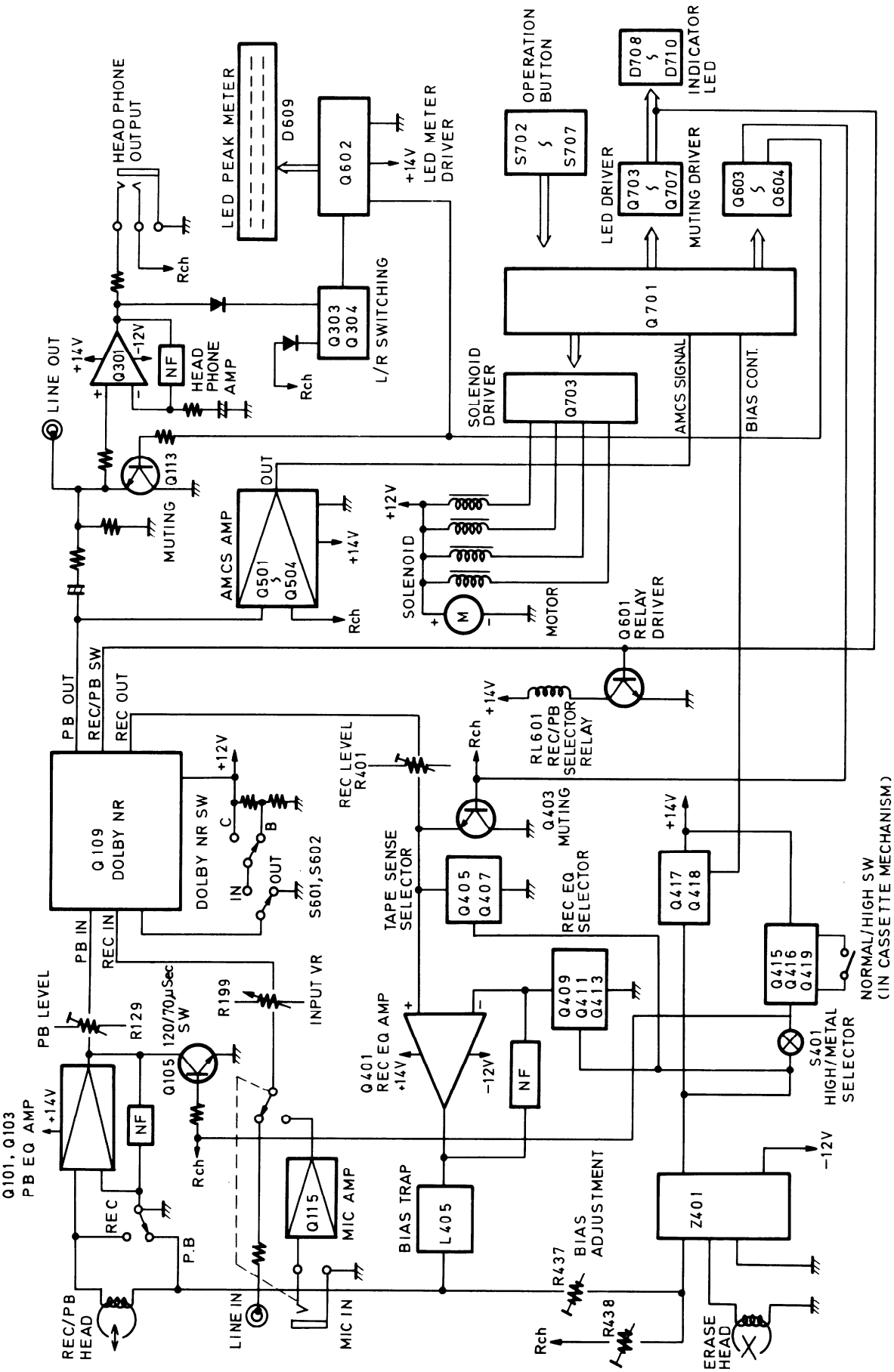
fig-2



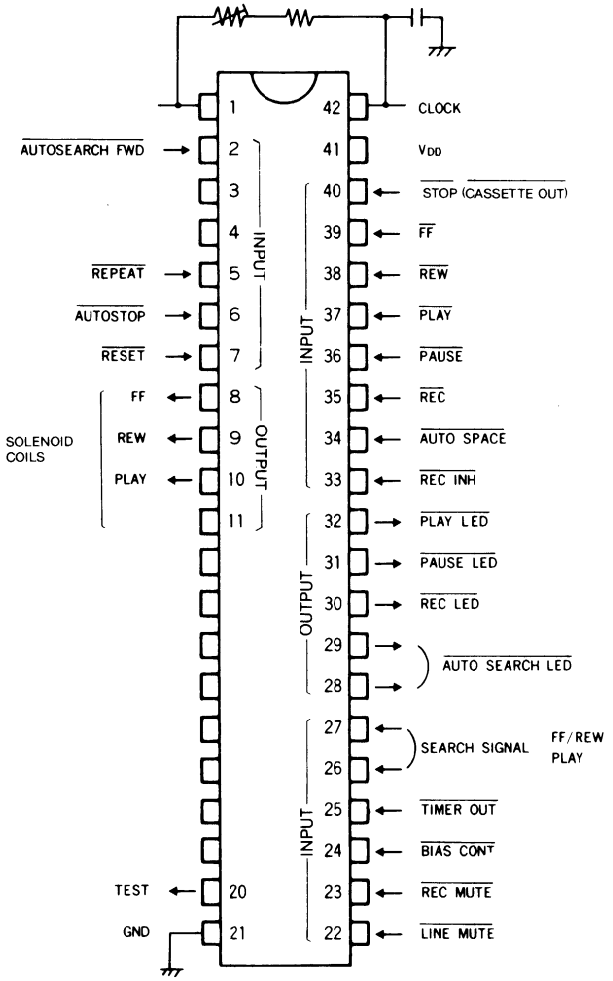
Confirming phase relationship

fig-1

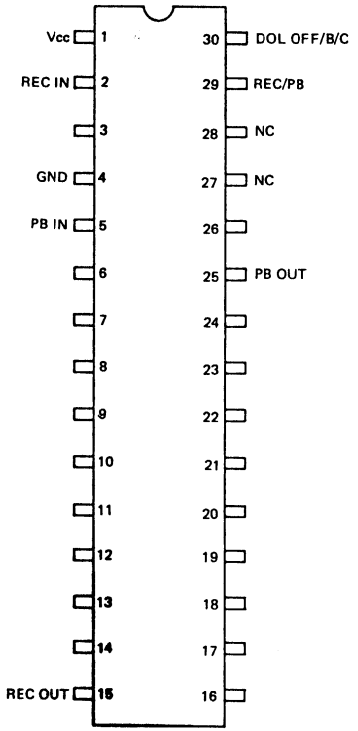
BLOCK DIAGRAM



LM6405L-233
(MICROCOMPUTER)



HA-12058 NT
(DOLBY B & C TYPE NOISE REDUCTION SYSTEM)



PRINTED CIRCUIT BOARD-PARTS LIST

REC/PB AMPLIFIER PC BOARD (NAAF-1766/a)

CIRCUIT NO.	PARTS NO.	DESCRIPTION
	ICs	
Q109, Q110	222729	HA-12058NT
Q301, Q302	222652	M5218L
Q401, Q402	222465	NJM4458D
Q501-Q504	222681, 222695 or 222604	1R3702, LA6324 or LM324N
Q602	222507	TA7612AP
Q701	222728	LM6405-233
Q703	222698	LB1287
	Transistors	
Q101-Q104	2211896 or	2SC1815L (L) or
Q115, Q116	2212256	2SC2458L (L)
Q105, Q106	2211254, 2212114 or 2210747	2SC1815 (Y), 2SC2458 (Y) or 2SC945A (Q1)
Q107, Q108	2211255, 2212115 or 2210746	2SC1815 (GR), 2SC2458 (GR) or 2SC945A (P)
Q113, Q114	2211706	2SD655 (F)
Q117, Q118	2212304, 2212303, 2211945 or 2211944	2SK381 (D), 2SK381 (C), 2SK246 (GR) or 2SK246 (Y), (G/W)
Q303, Q304	2211255,	2SC1815 (GR),
Q403, Q404	2212115 or 2210746	2SC2458 (GR) or 2SC945A (P)
Q405-Q414	2211254, 2212114 or 2210747	2SC1815 (Y), 2SC2458 (Y) or 2SC945A (Q1)
Q415	2211454,	2SA1015 (Y),
Q418, Q419	2212124 or	2SA1048 (Y) or
Q603-Q605	2210804	2SA733A (Q)
Q416, Q417	2211255,	2SC1815 (GR),
Q601	2212115 or 2210746	2SC2458 (GR) or 2SC945A (P)
Q704	2211254, 2212114 or 2210747	2SC18185 (Y), 2SC2458 (Y) or 2SC945A (Q1)
Q705-Q707	2211454, 2212124 or 2210804	2SA1015 (Y), 2SA1048 (Y) or 2SA733A (Q)
Q901	2201074, 2201035 or 2201385	2SD880 (Y), 2SD325 (E) or 2SD330 (E)
Q902, Q903	2201285 or 2201286	2SD882 (Q) or 2SD882 (P)
Q904	2211544 or 2211543	2SC1959 (Y) or 2SC1959 (O)
Q905	2201275 or 2201276	2SB772 (Q) or 2SB772 (P)
	Diodes	
D103, D104	223105, 223133 or 223145	1S1555, DS442X or 1S2076TD (G/W)
D301, D302	223132	1K60
D303, D304	223105,	1S1555,
D402, D502	223133 or	DS442X or
D503, D601	223145	1S2076TD
D402, D403	2241051, 2241052, 2239572 or 22399573	GZA9.1X, GZA9.1Y, RD9.1EB2 or RD9.1EB3
D602	2239591 or 2231063	RD10EB1 or GZA9.1Z (G/W)
D603-D608	223105,	1S1555,
D613	223133 or	DS442X or
D701-D705	223145	1S2076TD
D706, D707	223132	1K60
D901	223862	WL01
D902, D903	223842	GP-15B
D904	2241133 or 2239671	GZA13Z or RD15EB1
D905	2240952 or 2239473	GZA5.6Y or RD5.6EB 3
D906	2241151 or 2239672	GZA15X or RD15EB2
D907, D908	224113 or 2239651	GZA12Z or RD13EB1
	Coils	
L101, L102	233221	NMC-5021
L103, L104	233245	NMC-2029
L401, L402	24606070 or 231041	NCH-1008 or NCH-2080
L403, L404	24606069 or 231039	NCH-1007 or NCH-2079
L405, L406	233283	NCH-4060
	Osc. block	
Z401	24606141	NOB-022
	Capacitors	
C103, C104	392841007	10μF, 16V, LL
C109, C110	352732209	22μF, 10V, Elect.
C111, C112	352741009	10μ-F, 50V, Elect.
C117, C118	352780109	1μF, 50V, Elect.
C119-C122	352741009	10μF, 16V, Elect.
C127, C128	352732219	220μF, 10V, Elect.
C131, C132	392850477	4.7μF, 25V, LL
C137, C138	352783399	0.33μF, 50V, Elect.
C139, C140	352781599	0.15μF, 50V, Elect.
C141, C142	352784799	0.47μF, 50V, Elect.
C143, C144	352786899	0.68μF, 50V, Elect.
C153, C154	392850477	4.7μF, 25V, LL
C157, C158	352781599	0.15μF, 50V, Elect.
C159, C160	352784799	0.47μF, 50V, Elect.
C161, C162	352741009	10μF, 16V, Elect.
C163, C164	352751009	10μF, 25V, Elect.
C165-C168	352780109	10μF, 16V, Elect.
C301, C302	352741009	10μF, 16V, Elect.
C303, C304	352780339	3.3μF, 50V, Elect.
C401, C402	352782299	0.22μF, 50V, Elect.
C403, C404	352741009	10μF, 16V, Elect.
C415	352780109	1μF, 50V, Elect.
C416	352734709	47μF, 10V, Elect.
C504	352741009	10μF, 16V, Elect.
C505	352780109	1μF, 50V, Elect.
C601	352741009	10μF, 16V, Elect.
C602	352750479	4.7μF, 25V, Elect.
C604	352734709	47μF, 10V, Elect.
C605	352780109	1μF, 50V, Elect.
C702	352784799	0.47μF, 25V, Elect.
C902	352754719	470μF, 16V, Elect.
C903	352744709	47μF, 16V, Elect
C904	352780109	10μF, 16V, Elect.
C907	352780109	1μF, 50V, Elect.
C908	352753329	3,300μF, 25V, Elect.
C909	352742219	100μF, 25V, Elect.
C910, C913	352742219	220μF, 16V, Elect.

CIRCUIT NO.	PARTS NO.	DESCRIPTION
C911, C912	352741019	100μF, 16V, Elect.
C914	352752229	2,200μF, 25V, Elect.
C915	352742219	220μF, 16V, Elect.
C916, C917	352741019	100μF, 16V, Elect.
C918	352734709	47μF, 10V, Elect.
C919	352741019	100μF, 16V, Elect. (G/W)
C920	352724719	470μF, 6.3V, Elect.
C921, C922	352741009	10μF, 16V, Elect.
C923, C924	352734709	47μF, 10V, Elect.
	Resistors	
R129, R130	5215046	N08HR50KBC, Semi-fixed
R401, R402	5215044	N08HR5KBC, Semi-fixed
R437, R438	5215065	N08HR150KBC, Semi-fixed
R439	441523904	39ohm, 1/2W, Metal oxide film
R442	441524714	470ohm, 1/2W, Metal oxide film
R443	441526814	680ohm, 1/2W, Metal oxide fim
R444	441521804	18ohm, 1/2W, Metal oxide film
R701-R706	49121392406	3.9kohmx6, 1/8W, Network
R707-R714	49121392408	3.9kohmx8, 1/8W, Network
R715	5215022	N08HR20KBC, Semi-fixed
R718-R721	49121222404	2.2kohmx4, 1/8W, Network
R901	441520224	2.2ohm, 1/2W, Metal oxide film
R902	431523315	330ohm, 1/2W, Solid
R903	441521514	150ohm, 1/2W, Metal oxide film
R905	441520224	2.2ohm, 1/2W, Metal oxide film
R906, R909	431524715	470ohm, 1/2W, Solid
R910	441520224	2.2ohm, 1/2W, Metal oxide film
	Switches	
S401, S601	25035353	NPS-322-L316, Dolby & Tape selector
S602		
	Relay	
RL601	25065174	NRL-2P1A-DC-12-09
	Terminals	
P601	25045120	NPJ-4PDBL49, Input/output
P602	25045134	HLJ4337-01-010, Microphone
P606	25050064	NSCT-5P18, DIN (G/W)
	Plugs	
P401	25055042	NPLG-3P, Erase head
P604	25055037	NPLG-6P28, Rec/pb head
P605	25055047	NPLG-12P35, Meter
	Socket	
P702	2000251	NSAS-11P189, Tape mechanism
	Radiators	
	27160029	RD-07
	27160029-1	RD-07B

Note: G: Only 220V model
W: Only 120/220V model

TAPE SELECTOR AND DOLBY INDICATOR PC BOARD (NADIS-1767)

CIRCUIT NO.	PARTS NO.	DESCRIPTION
D404-D406	225125	SLP-273B-01, LEDs
D610, D611	225124	SLP-173B-01, LEDs
	27190121	Holder, LED

INPUT LEVEL CONTROL PC BOARD (NAVR-1768)

CIRCUIT NO.	PARTS NO.	DESCRIPTION
R199, R200	5104132	N16RKF50KA45F, Variable resistor

OPERATION SWITCH PC BOARD (NASW-1769)

CIRCUIT NO.	PARTS NO.	DESCRIPTION
D708	225127	GL-3PG1, LED
D709, D710	225126	GL-3PR1, LEDs
S702-S710	25035275 or	NPS-111-S239 or
	25035389	NPS-111-S353, Push switches

TIMER SWITCH PC BOARD (NASW-1770)

CIRCUIT NO.	PARTS NO.	DESCRIPTION
S701	25030227	NRS-123-25U, Rotary switch

HALL IC PC BOARD (NATD-1771)

CIRCUIT NO.	PARTS NO.	DESCRIPTION
Q702	222558	DN6838, Hall IC
	27190173	Holder

LAMP PC BOARD (NAPL-1772)

CIRCUIT NO.	PARTS NO.	DESCRIPTION
Pl601	210090	PL14V150mA, Lamp
	28140488	Cushion

REMOTE CONTROL TERMINAL PC BOARD (NARM-1773)

CIRCUIT NO.	PARTS NO.	DESCRIPTION
P701	25050070	NSCT-7P20, DIN terminal

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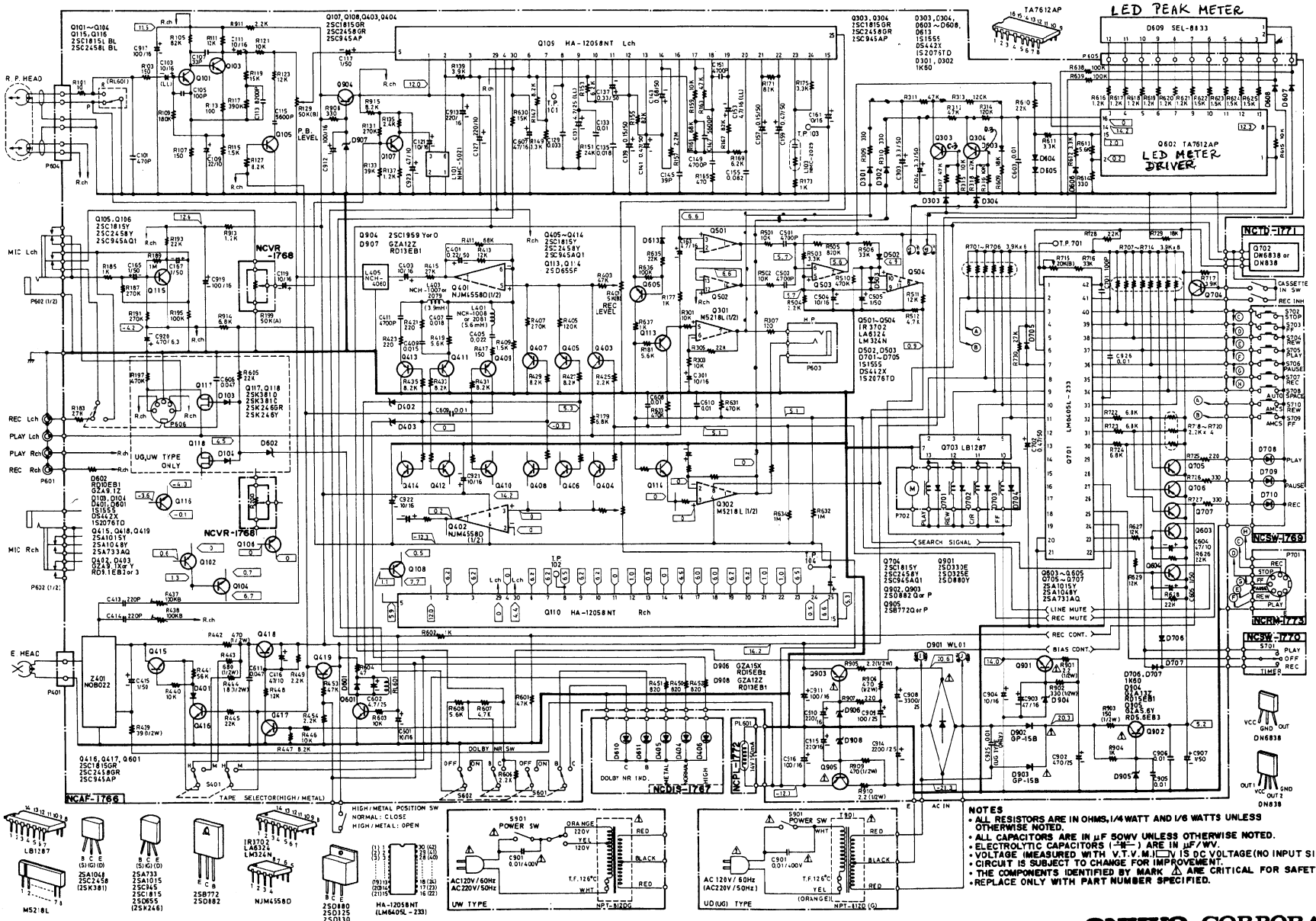
SCHEMATIC DIAGRAM



NOTES

- ALL RESISTORS ARE IN OHMS, 1/4 WATT AND 1/6 WATTS UNLESS OTHERWISE NOTED.
- ALL CAPACITORS ARE IN μF 50WV UNLESS OTHERWISE NOTED.
- ELECTROLYTIC CAPACITORS (±) ARE IN μF/WV.
- VOLTAGE (MEASURED WITH V.T.V.M.) □V IS DC VOLTAGE (NO INPUT SIGNAL)
- CIRCUIT IS SUBJECT TO CHANGE FOR IMPROVEMENT.
- THE COMPONENTS IDENTIFIED BY MARK ⚠ ARE CRITICAL FOR SAFETY.
- REPLACE ONLY WITH PART NUMBER SPECIFIED.

TAPE MECHANISM-EXPLODED VIEW